Attachments to Bill Wilson's Expert Report
June 12, 2005

Attachment 1:	Opacity Summary for Kiln #2
Attachment 2:	Opacity Summary for Kiln #1
Attachment 3:	June 21, 1996 letter from Mountain Cement to DEQ regarding replacement of ESP with baghouse.
Attachment 4:	1978 design and performance parameters for Kiln #2 ESP (Mikropul)
Attachment 5:	Mountain Cement's 1987 application to the DEQ for modification of Kiln #2, excerpts.
Attachment 6:	January 2, 2004 RETEC stack test, excerpts.
Attachment 7:	TRK 2000 and 2001 reports, cover pages and pp. 3888 – 3890, and pp. 3934 – 3939
Attachment 8:	TRK 2004 report, cover page and p. 3791.
Attachment 9:	Permit documents showing use of baghouses to control kiln emissions at Illinois Cement Co. plant in La Salle, Illinois, the Texas Lehigh Cement Co. plant in Buda, Texas, and the Nevada Cement Co. plant in Fernley, Nevada
Attachment 10:	Permit documents showing use of baghouses to control kiln emissions at Mountain Cement competitor plants, including Cemex cement plant in Lyons, Colorado, and GCC Dacotah cement plant in Rapid City, South Dakota.
Attachment 11:	November 18, 2002 Mountain Cement Capital Expenditures Request CER #03-504.
Attachment 12:	December 18, 2002 Mountain Cement letter to DEQ showing annual operation and maintenance cost for Kiln #2 ESP.
Attachment 13:	EPA's Pollution Control Cost Manual for baghouses, excerpts.
Attachment 14:	Resume of Bill Wilson, P.E.

Bill Wilson Expert Report

Attachment 1

Biodiversity Conservation Conservation Alliance & Sierra Club v.
Mountain Cement Co., Case No. 04CV 361-B
June 13, 2005

MOUNTAIN CEMENT									
KILN #2									
EXCESS EMISSION SUMMARY									
4TH QUARTER 1999 - 1ST QUARTER 2005									
"BATES" PAGE NUMBERS ON QUARTERLY OPACITY EXCESS EMISSIONS REPORTS:	7-10	21-23	30-33	40-42	49-52	65-68	83-89	101-131	142-178
CAUSE	4TH 1999	1ST 2000	2ND 2000	3RD 2000	4TH 2000	1ST 2001	2ND 2001	3RD 2001	4TH 2001
Startup/Shutdown		4		74	75	19	121	240	272
Control Equipment Problems	2163	110	48		63	68	654	359	767
Process Problems	57	59	237	82	247	353	701	831	387
Other Known Problems	3	3	35	29	72	95	5		16
Unknown Causes	27	16	13	15	47	46	67	14	4
Auxiliary Equipment Startup									
Erratic Feed Rate									
Erratic Fuel Rate									
Plugged System									
Broken Dust Collector Bag(s)									
Precipitator Malfunction									
Lost Auxiliary Equipment									
Lost Temperature Control									
Working in/on Equipment									
Fan Malfunction									
Spray Malfunction									
Equipment Plugged									
Electrical Surge									
Monitor Problems									
Testing									
Total	2250	192	333	200	504	581	1548	1444	1446

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MOUNTAIN CEMENT									
KILN #2									
EXCESS EMISSION SUMMARY									
4TH QUARTER 1999 - 1ST QUARTER 2005									
"BATES" PAGE NUMBERS ON QUARTERLY OPACITY EXCESS EMISSIONS REPORTS:	203-244	259-279	290-299	311-323	338-353	364-370	380-388	403-418	428-435
CAUSE	1ST 2002	2ND 2002	3RD 2002	4TH 2002	1ST 2003	2ND 2003	3RD 2003	4TH 2003	1ST 2004
Startup/Shutdown	169	40	140	176	244	109	67	308	44
Control Equipment Problems	1394	600							
Process Problems	16	1		16	60	21		7	
Other Known Problems			5		4	7			
Unknown Causes		3	10		13	5	1	12	1
Auxiliary Equipment Startup				36		3	36		4
Erratic Feed Rate			37		17	5	2	6	15
Erratic Fuel Rate			3					1	
Plugged System						13	50	73	170
Broken Dust Collector Bag(s)					7				
Precipitator Malfunction			61	52	4	3	7	24	
Lost Auxiliary Equipment				25	9	49	6	7	55
Lost Temperature Control				113	105	38		1	19
Working in/on Equipment			155	135	231	12	112	140	14
Fan Malfunction					2		2		16
Spray Malfunction				8			1		
Equipment Plugged			5						
Electrical Surge					36	22	10	133	
Monitor Problems					2				
Testing							69		
Total	1579	644	416	561	734	287	363	712	338

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MOUNTAIN CEMENT						
KILN #2						
EXCESS EMISSION SUMMARY						
4TH QUARTER 1999 - 1ST QUARTER 2005						
"BATES" PAGE NUMBERS ON QUARTERLY OPACITY EXCESS EMISSIONS REPORTS:	451-457	472-481	501-510	524-534		
CAUSE	2ND 2004	3RD 2004	4TH 2004	1ST 2005		TOTAL
Startup/Shutdown	195	207	285	244		3033
Control Equipment Problems						6226
Process Problems	3	12	6	17		3113
Other Known Problems				52		326
Unknown Causes	15	5		2		316
Auxiliary Equipment Startup		4	14	8		105
Erratic Feed Rate	1	4		2		89
Erratic Fuel Rate		2				6
Plugged System	1	4	12	38		361
Broken Dust Collector Bag(s)						7
Precipitator Malfunction				67		218
Lost Auxiliary Equipment	1		69	35		256
Lost Temperature Control		3	2			281
Working in/on Equipment	45	70	10	12		936
Fan Malfunction	3		2	1		26
Spray Malfunction		49	6			64
Equipment Plugged						5
Electrical Surge		60		7		268
Monitor Problems			4	1		6
Testing						69
Total	264	420	410	486		15711

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Bill Wilson Expert Report

Attachment 2

Biodiversity Conservation Conservation Alliance & Sierra Club v.
Mountain Cement Co., Case No. 04CV 361-B
June 13, 2005

MOUNTAIN CEMENT									
KILN #1									
EXCESS EMISSION SUMMARY									
4TH QUARTER 1999 - 1ST QUARTER 2005									
CAUSE	4TH 1999	1ST 2000	2ND 2000	3RD 2000	4TH 2000	1ST 2001	2ND 2001	3RD 2001	4TH 2001
Startup/Shutdown									27
Control Equipment Problems									
Process Problems									
Other Known Problems									
Unknown Causes									1
Auxiliary Equipment Startup									
Erratic Feed Rate									
Erratic Fuel Rate									
Plugged System									
Broken Dust Collector Bag(s)									
Precipitator Malfunction									
Lost Auxiliary Equipment									
Lost Temperature Control									
Working in/on Equipment									
Fan Malfunction									
Spray Malfunction									
Equipment Plugged									
Electrical Surge									
Monitor Problems									
Testing									
Total	0	0	0	0	0	0	0	0	28

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MOUNTAIN CEMENT									
KILN #1									
EXCESS EMISSION SUMMARY									
4TH QUARTER 1999 - 1ST QUARTER 2005									
CAUSE	1ST 2002	2ND 2002	3RD 2002	4TH 2002	1ST 2003	2ND 2003	3RD 2003	4TH 2003	1ST 2004
Startup/Shutdown				6					3
Control Equipment Problems									
Process Problems				8					
Other Known Problems			2		16				
Unknown Causes	1		1		3				
Auxiliary Equipment Startup									
Erratic Feed Rate						3			
Erratic Fuel Rate									
Plugged System								3	
Broken Dust Collector Bag(s)			8		8				
Precipitator Malfunction									
Lost Auxiliary Equipment									1
Lost Temperature Control									
Working in/on Equipment			10		2				
Fan Malfunction				83					
Spray Malfunction				8					
Equipment Plugged									
Electrical Surge									
Monitor Problems									
Testing									
Total	1	0	21	105	29	3	0	3	4

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MOUNTAIN CEMENT						
KILN #1						
EXCESS EMISSION SUMMARY						
4TH QUARTER 1999 - 1ST QUARTER 2005						
CAUSE	2ND 2004	3RD 2004	4TH 2004	1ST 2005		TOTAL
Startup/Shutdown	6					42
Control Equipment Problems						0
Process Problems						8
Other Known Problems						18
Unknown Causes						6
Auxiliary Equipment Startup						0
Erratic Feed Rate						3
Erratic Fuel Rate						0
Plugged System						3
Broken Dust Collector Bag(s)						16
Precipitator Malfunction						0
Lost Auxiliary Equipment	7					8
Lost Temperature Control						0
Working in/on Equipment						12
Fan Malfunction	1					84
Spray Malfunction						8
Equipment Plugged						0
Electrical Surge						0
Monitor Problems						0
Testing						0
Total	14	0	0	0		208

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Bill Wilson Expert Report

Attachment 3

Biodiversity Conservation Conservation Alliance & Sierra Club v.
Mountain Cement Co., Case No. 04CV 361-B
June 13, 2005

6/21/96

MOUNTAIN CEMENT COMPANY
5 Sand Creek Rd.
Laramie, Wyoming 82070
(307) 745-4875



June 21, 1996

Charles Collins
Department of Environmental Quality
Division of Air Quality
122 W. 25th Street
Cheyenne, Wyoming 82002

Subject: Notice of Violation Docket No. 2751-96

Dear Mr. Collins,

Mountain Cement Company is in receipt of the Division of Air Quality Notice of Violation, Docket No. 2751-96. The NOV has been issued for failure to meet particulate emission conditions specified on Permit No. CT-1137. The NOV orders that Mountain Cement continue to explore and implement improvements in the operation of the #1 Kiln and precipitator to achieve compliance and that Mountain Cement submit a plan and schedule for achieving compliance with the permit allowable particulate rate to DEQ - Air Quality by June 21, 1996.

This letter details Mountain Cement Company's plans and reasoning to attain compliance with particulate emissions with the No. 1 Kiln system. The response is divided into four main categories: A description of interim operating conditions; a format and frequency of reporting during interim operations; a time schedule to achieve compliance and a discussion regarding the reasoning for the decision made.

INTERIM OPERATIONS

The No. 1 Kiln started production on January 31 of 1996. Initial operations indicated that there was a problem with attaining opacity on kiln stack emissions which was attributed to the precipitator and an additional problem achieving a quality product at the designed production rates. MCC immediately requested technical assistance from recognized experts on precipitator operation, chain design, gas conditioning, quality control and kiln operations to assist in defining and solving the operational difficulties.

After several months of effort and four tests to quantify stack emissions, it is clear that there have been improvements made on the system that have reduced emissions. Operations of the No. 1 Kiln have also reached steady state conditions that can be maintained over long periods of time. Recent stack particulate emission rate tests are evidence of this operation. Stack tests on April 23 of 1996 indicated an emission rate of 26.7 pounds per hour. Stack tests on May 7 and June 6 indicate rates of 4.5 and 13.7 pounds per hour respectively, and both rates are significantly reduced from the initial test of April 23.

Ambient air impact modeling was performed on the out of compliance particulate emission rate of 26.7 pounds per hour. Total ambient impacts were insignificantly increased at this higher rate and air quality remained well below the state levels that indicate poor quality. Initial review of operational conditions during the stack tests indicate the reduction of emissions over the initial test can continue to be achieved by control of the following:

1. Maintaining the kiln feed rate at or below 28 TPH. This limits the amount of particulate that is stripped off as it is being introduced into the kiln thus reducing the particulate load to the precipitator. This rate may increase due to the following two operational conditions:
 a) If MCC pumps precipitator dust from the No. 1 Kiln back to the #2 Kiln blend silos, this dust will return to the #1 kiln system mixed with the unprocessed raw meal. To achieve an equivalent feed of raw material, the rate shown on our feed scales must increase. This insures proper kiln process stability. These periods can be documented on the daily logs of kiln operation.
 b) Occasionally the kiln will get into a cycle where nitrogen oxides rise quickly (over a one to two hour period). The best way to break this cycle is to add feed to the kiln for a short period of time. This increase rarely last over 1 hour and these periods can be documented in daily kiln operational log books.

2. Maintaining proper gas conditioning to the precipitator. Gas conditioning has been improved by installation of a larger water introduction nozzle. Control of the amount of water into the gas stream greatly assists precipitator operation. Better gas conditioning efficiency also allows reduction of bleed air into the system as an alternate method to cooling the gasses.

3. Consistent maintenance practices that immediately address equipment malfunctions and improve system performance.

4. Continued improvement of precipitator operation. It is apparent that the reliability of the existing precipitator is improving and has been enhanced. Opacity outages associated with gas conditioning have decreased and currently only auxiliary equipment malfunctions have caused any downtime on precipitator operation. Field activity has increased significantly compared to operations during the April 23 test.

precipitator to a pulse jet baghouse dust collector. The schedule has been developed using the most current information from the vendor regarding the installation and with consideration that it must be enforceable. Every effort will be made to improve on this schedule as opportunities arise.

Based on this decision, the following compliance schedule has been developed.

June 21 to July 12 (3 weeks)
Complete design considerations for project and develop performance and installation warranties.

July 12 to October 4 (12 weeks)
Detail engineering drawings, develop job and equipment specifications, order auxiliary equipment such as additional electrical components, baghouse fan, etc. At the end of this period all engineering will have been completed and approved and all equipment will have been placed on order.

October 4 to December 12 (10 weeks)
Receive and layout materials on-site, equipment and electrical components for installation, begin foundation installation. At the end of this period the majority of equipment will have been received on site and foundations for the major equipment will have been placed.

December 12 to February 21 (10 weeks)
Installation of mechanical, electrical and baghouse. The kiln will be shut down on or about December 27. The period prior to this time will be used to set up the contractor, organize equipment and assure all fabricated materials meet the contractor needs.

February 21 to March 3 (2 weeks)
Test electrical and mechanical equipment without loads. Check instrumentation and controls for operation. The kiln will not be operational during this period.

March 3 to March 15 (2 weeks)
Start-up and equipment check-out.

The above schedule has some allowances made for poor weather conditions during installation and delays related to equipment delivery. The No. 1 Kiln will be shut down for installation of the pulse jet dust collector on or before December 27, 1996.

Compliance testing for particulate emissions will take place within 45 days of start-up.

DISCUSSION

Mountain Cement has considered several variables to reach a decision to convert the precipitator to a pulse jet baghouse dust collector. This particular solution to achieve compliance with particulate emission rates is neither the most inexpensive nor is it necessarily the most expedient solution for an installation schedule. The primary consideration was to achieve NSPS compliance at less than or equal to that approved on permit No. CT-1137 at any production rate (48 TPH maximum feed into the kiln, .3 lbs of particulate emission per ton of feed). Additional consideration was also given to the factors detailed in the Compliance Schedule.

Practical and industrial experience indicates that either a baghouse or a precipitator are considered the best available control technology for controlling emissions on cement kilns. Precipitators have some advantages related to long component life, lower power consumption, steady state operation with a steady state kiln process and resistance to heat. Baghouses will have higher maintenance costs and power consumption, are less resistant to high heat but they offer better compliance assurance, if kiln operations might be varied and if particulate load to the collector varies. The baghouse is not as sensitive to gas conditioning nor to the fineness or chemical composition of the particulate. Considering all currently identified variables related to kiln operation, existing precipitator dust composition and possibility of increased production, the best option was the precipitator conversion.

Two types of baghouses were considered. The first type was the pulse jet baghouse so named because cleaning of the bag surface is accomplished by pulsing a jet of air through the bag. The other type was a reverse air baghouse which uses a fan to reverse the air flow through baghouse compartments. This cycle collapses and cleans the bags. Both types will effectively control emissions but the reverse air bags usually have a longer life because the cleaning cycle is less damaging to the bag then pulses of air. The pulse jet baghouse, however, has a higher air to cloth ratio (uses less cloth area) than a reverse air baghouse because bag cleaning is more effective when done with compressed air pulses. Additionally, recent technology improvements in bag design have greatly extended bag life for pulse jet baghouses. Since the reverse air dust collectors use more bags, this option is much more expensive than installation of a pulse jet dust collector. Because both systems are equally effective in collecting particulate, the pulse jet baghouse dust collector was judged the best option for economical reasons.

Two options were considered for the pulse jet dust collector. One option was to convert the existing precipitator housing into a baghouse and the other was to build a new baghouse along side the precipitator. Neither option had any performance, maintenance, bag life or efficiency considerations that would allow any additional weight to choosing one over the other. Costs for converting the precipitator into a pulse jet dust collector were lower that installing a stand alone dust collector so this option was chosen.

Attached are some of the letters from the vendors related to pulse jet operation and existing installations using pulse jet baghouse technology.

Mountain Cement Company is committed to solving this compliance issue. It is our conclusion that the conversion of the precipitator to a pulse jet baghouse dust collector is the best solution.

Thank you for you consideration in this matter. Please review this information and call me at (307) 745-4879 ext. 21 if you should have any question or require additional information.

Sincerely,

Frank Plummer

Frank Plummer
Environmental and Safety Manager

Bill Wilson Expert Report

Attachment 4

Biodiversity Conservation Conservation Alliance & Sierra Club v.
Mountain Cement Co., Case No. 04CV 361-B
June 13, 2005

Subsidiary of
MikroPul
CORPORATION

UNITED STATES FILTER CORPORATION / 10 CHATHAM ROAD, SUMMIT, NEW JERSEY 07901 / 201—273-6360 / CABLE: MIKROPUL / TELEX: 13-8157

November 30, 1978

Monolith Cement Co.
Monolith, California 93548

RECEIVED
DEC 18 1978

Attention: Mr. Steve Barker
Director of Engineering

Gentlemen:

Subject: Cresent Engineering Inquiry No. 682-01
MikroPul's Proposal No. 62-78-095

We are pleased to confirm the information transmitted to Cresent Engineering on November 22, 1978, concerning the revised volume for your new precipitator at your Laramie, Wyoming Plant. This increase in volume would require us to increase our proposed precipitator height by four (4) additional feet of collecting area. The new precipitator Model No. 2C x 21P x 34H x 3B8P x 6B4TR. This precipitator of course will be capable of handling the new gas volume which is 246,000 ACFM at 500°F. All other design conditions and guarantees will remain as originally specified in our based proposal. The revised precipitator will contain 103,049 square foot of collecting plate area, which is sufficient to handle the increase in gas volume as well as the 3/4 - 3% of shale oil in your process.

It is MikroPul's feeling that the shale oil residue will not cause serious problems to the collecting efficency of our precipitator, due to the design of our collecting electrodes and our high energy rapping system.

This revised precipitator and our base precipitator had been designed to handle 15 grains per ACF inlet grain loading as originally specified, by recirculating the dust back to the kiln will not present a problem in the operation of our precipitators.

The cost for the re-sized hybrid precipatator including all those auxiliaries as described in our original proposal and including freight F.O.B. jobsite is:

$691,750.00

Hopper Auxiliary Equipment remains unchanged at:

$4,400.00

Structural Support for the revised precipitator:

$37,195.00

Erection for our revised precipitator will remain as originally quoted:

$388,980.00

MikroPul Certificate of Performance

Monolith Portland Cement Company
COMPANY NAME

October 3, 1978
DATE

A. PERFORMANCE GUARANTEE

MikroPul guarantees that when the equipment covered by this agreement is constructed, adjusted and operated at the conditions specified herein an efficiency of 99.95% will be obtained. An outlet loading of .0075 grs./ACF shall be deemed to meet this guarantee. This performance guarantee is based upon the analysis and other specifications in the bid request.

Operating Conditions:

Gas Volume	220,000 ACFM @ 500°F
Inlet Dust Load	15.0 Grs./ACF
Outlet Dust Load	0.0075 Grs./ACF (14.15 lbs./hour)
Guaranteed Efficiency	99.95%

B. PROVISIONS

1. The equipment shall be adjusted and operated under the direction of MikroPul personnel during start-up and check out operation.
2. Performance test procedures shall follow established EPA procedures. Results shall be averaged over three tests.
3. Performance tests shall be conducted within ninety (90) days after equipment is ready for operation. If tests are delayed by other than MikroPul, the Purchaser shall place the equipment in proper operating conditions agreeable to both parties prior to conducting tests.
4. MikroPul shall have the right to make whatever adjustments and/or additions to the equipment at its own expense as may be necessary to meet the guaranteed performance.
5. Except as provided above, no other liability, expressed or implied, is assumed by MikroPul for failure of the euqipment to meet the performance guarantee.
6. For the above performance guarantees and warranties to be valid, the precipitator must be erected in accordance with the drawings and procedures of MikroPul and the service of a MikroPul full-time advisor must be utilized.

MikroPul USF
CORPORATION
SUBSIDIARY OF UNITED STATES FILTER CORPORATION
10 Chatham Road, Summit, N.J. 07901 —— Phone: (201) 273-8360

Bill Wilson Expert Report

Attachment 5

Biodiversity Conservation Conservation Alliance & Sierra Club v.
Mountain Cement Co., Case No. 04CV 361-B
June 13, 2005

 6-81

MOUNTAIN CEMENT COMPANY
P.O. Box 339
Laramie, Wyoming 82070
(307) 745-4879

April 6, 1987



Mr. Charles A. Collins
Administrator
Air Quality Division
Department of Environmental Quality
122 West 25th Street
Cheyenne, Wyoming 82002

Dear Mr. Collins:

Enclosed are permit applications for the New Raw Mill and #2 Kiln Modifications and the Blend Silos and Kiln Feed systems at the Mountain Cement Company plant located south of Laramie, Wyoming.

The following is a description of each system:

1. New Raw Mill (Flow sheet MC-FS-1):

Raw materials properly proportioned by the weigh feeders R109-1 thru 6 will be delivered to the raw mill R205 by belt conveyor R111 and belt feeder R204. The raw materials will be ground and dryed in the raw mill and transported by the kiln gases to the cyclones R211-1 & 2 where over 90% of the ground cement raw mix will be collected and dropped into the blending silos. The gases will pass through the raw mill fan to the existing Kiln #2 electrostatic precipitator for final collection before being discharged out the exhaust stack. The dust collected by the electrostatic precipitator will be transported to the existing elevated dust tank and will be returned to the blending silos by an existing pneumatic conveying system.

2. #2 Kiln Modifications (Flow Sheet MC-FS-3):

The existing #2 Kiln will be converted to dry process by the addition of a new two-stage preheater (K316), a new water spray tower (K317), a new kiln I.D. fan (K321) and an addittional heat exchanger (K538-540), baghouse (K541) and vent fan (K543) on the clinker cooler vent system. This modification will increase the production rate to 1500 tons/day of clinker and reduce the fuel consumption to 3,500,000 Btu/ton clinker.

3. Blending Silos (Flow Sheet MC-FS-1):

Ground raw mix from the raw mill cyclones R211-1 & 2 will be blended in the blend silos K200-1 & 2 using the blending air compressors K204-1, 2 & 3 and maintained in an aerated condition by the aeration compressors K203-1 & 2. The aeration and blending air will be vented by either of the dust collectors K208-1 or K208-2. Each collector is sized to be capable to vent both silos, therefore one is a spare.

4. Kiln Feed System (Flow Sheet MC-FS-1):

Kiln feed raw mix will be withdrawn from either silos at a controlled rate to bucket elevator K214 to weigh feeder K215-1 then to the airlift for transport to the alleviator K218 which will drop the raw mix into the feed point on the two-stage preheater. The airlift air will be vented through a baghouse K222. Raw mix collected in the baghouse will also drop into the preheater feed chute.

5. Dust Collectors for the existing Cement Storage Silos:

We have added six (6) DCE Vokes Model DLMV 20/H 2000 CFM dust collectors to the existing cement storage silos to vent conveying air from the finish mill F-K pumps. Based on an emission rate of 0.02 gr/ACF each of these collectors will emit 0.34#/HR of cement particulates.

The following are our calculations of emissions from the Kiln Stack - Emissions Point #3 and from the Clinker Cooler Vent - Emission Point #4 for your use in reviewing these permit applications:

KILN STACK-EMISSION POINT #3

I. Mill Running:

Calculated uncontrolled emission (Particulates)

@ 116,600 ACFM, 176°F, 23.7 gr/ACF.

$$116{,}600 \frac{\text{ACF}}{\text{min.}} \times 23.7 \frac{\text{gr.}}{\text{ACF}} \times \frac{1\#}{7000 \text{ gr}} \times \frac{60 \text{ min.}}{1 \text{ HR}} = 23{,}687\#/\text{HR.}$$

Calculated controlled emission (Particulates)

@ 116,6000 ACFM w/99.95% Control

23,687#/HR x (1-0.9995) = 11.9 #/HR.

Allowable Emission Rate (Particulate)

based on NSPS; 0.3 #/ton kiln feed

Kiln feed based on 36% ignition loss and clinker production of 62.5 T/HR.:

$$\frac{62.5 \text{ T/HR}}{(1-0.36)} = 97.66 \text{ T/HR}$$

97.66 T/HR x 0.3 #/T = 29.3 #/HR.

II. Mill Down:

Calculated uncontrolled emission (Particulates)

@ 144,920 ACFM, 350°F, 14.9 gr./ACF.

$$144{,}920 \frac{\text{ACF}}{\text{Min}} \times 14.9 \frac{\text{gr}}{\text{ACF}} \times \frac{1\#}{7000 \text{ gr}} \times \frac{60 \text{ min.}}{1 \text{ HR}} = 18{,}508 \text{ \#/HR.}$$

Calculated controlled emission (Particulate)

@ 144,920 ACFM w/99.95% Control

18,508 #/Hr. (1-0.9995) = 9.3 #/HR.

III. Calculated SO_2 emission rate:

Coal Firing Rate @ 3,500,000 Btu/ton clinker & 11,000 Btu/# coal heat value.

$$\frac{62.5 \text{ T/Hr} \times 3{,}500{,}000 \text{ Btu/T.}}{11{,}000 \text{ Btu/\#} \times 2000 \text{ \#/T.}} = 9.95 \text{ T/Hr.}$$

Total Sulfur input w/1% Sulfur Coal:

9.95 T/Hr x 2000 #/T x 0.01 = 199 #/Hr. Sulfur

Fuel SO_2 = 2 x 199 #/Hr. = 398 #/Hr.

Fuel SO_2/ton clinker = $\frac{398\ \#/Hr.}{62.5T/HR.}$ = 6.37 #SO_2/T. clinker

Mineral Source SO_2 (From previous report) 13.1 #SO_2/T. clinker

Total 19.47 #SO_2/T. clinker

Using an absorbtion factor of 65% for the SO_2 due to contacting kiln gases with the cement raw mix in the raw mill to below 200°F the SO_2 emissions would be:

0.35 x 19.47 #SO_2/T. clinker = 6.8 #SO_2/T. clinker

6.8 #/SO_2/Ton clinker x 62.5 T/Hr. = 425 #SO_2/Hr.

IV. Calculated NOX Emission rate:

Based on the measured rate obtained from tests on the #1 kiln of 3.24# NOX/ton clinker the NOX emission rate would be:

62.5 T. clinker/hr. x 3.24 #NOX/ t. clinker = 202.5 #NOX/HR.

CLINKER COOLER VENT-EMISSION POINT #4

I. Calculated Emission Rate:

Clinker Rate to Cooler - 62.5 T/Hr.

Proposed baghouse air volumes;

Normal operating conditions:

Existing baghouse #1	56,500 ACFM, 250°F
New baghouse #2	75,000 ACFM, 250°F
Total	131,500 ACFM, 250°F

Upset conditions:

Existing baghouse #1	65,600 ACFM, 425°F
New baghouse #2	98,000 ACFM, 425°F
Total	163,600 ACFM, 425°F

Calculated emission rate:

Normal conditions:

$$131{,}500 \frac{ACF}{Min} \times 0.005 \frac{gr.}{ACF} \times \frac{1\#}{7000 gr} \times 60 \frac{Min.}{HR} = 5.7 \#/HR.$$

Upset conditions:

$$163{,}600 \frac{ACF}{Min} \times 0.005 \frac{gr}{ACF} \times \frac{1\#}{7000\ gr} \times 60 \frac{Min.}{HR.} = 7 \#/HR.$$

Allowable emission rate:

based on NSPS of 0.1 #/Ton kiln feed

97.66 T. Kiln Feed/HR. x 0.1#/T. kiln feed = 9.77 #/HR.

The increased emissions from the modified Kiln #2 clinker cooler vent over the previously permitted 5.9 #/Hr. will be 3.87 #/HR. This increase can be offset by the permitted emissions from existing Kiln #1.

Please contact me should you have any questions concerning this submittal.

Very truly yours,

MOUNTAIN CEMENT COMPANY

Harry Huber
President

HH:bc

Encl.

Bill Wilson Expert Report

Attachment 6

Biodiversity Conservation Conservation Alliance & Sierra Club v.
Mountain Cement Co., Case No. 04CV 361-B
June 13, 2005

RETEC

Kiln #2 Particulate Test Report

Mountain Cement Company
Laramie, Wyoming

Prepared by:

The RETEC Group, Inc.
2409 Research Boulevarde, Suite 106
Fort Collins, Colorado 80526

RETEC Project Number: MCC01-16902-600

Prepared for:

Mountain Cement Company
5 Sand Creek Road
Laramie, Wyoming 82070

CONFIDENTIAL

January 2, 2004

Table 2-1 Particulate Measurement Results
Kiln #2 Stack
Mountain Cement Company

Test Parameters	K2-1 11/25/03 1105-1210	K2-2 11/25/03 1242-1346	K2-3 11/25/03 1425-1530	Average
Sample Time (min)	60	60	60	60
Vol meter (acf)	52.020	54.298	54.730	53.683
Ave. SQRT dP (in WC)1/2	0.93	0.94	0.97	0.95
dH (in WC)	1.95	1.99	2.12	2.02
T stack (F)	204.1	206.8	203.0	204.6
T meter (F)	52.5	57.7	57.4	55.9
P static (in WC)	-0.82	-0.80	-0.83	-0.82
P bar (in Hg)	22.55	22.55	22.55	22.55
P stack (in WC)	22.49	22.49	22.49	22.49
H2O Mass Gain (g)	212.8	231.3	240.7	228.3
Yd (meter coef.)	1.003	1.003	1.003	1.003
dH @ (in WC)	1.769	1.769	1.769	1.77
Cp (pitot coef.)	0.84	0.84	0.84	0.84
Dia stack (in)	108.0	108.0	108.0	108.0
Dia nozzle (in)	0.245	0.245	0.245	0.245
CO_2 (%)	14.00	14.00	14.00	14.00
O_2 (%)	11.00	11.00	11.00	11.00
Vol meter (std) (dscf)	40.751	42.120	42.493	41.788
Md (lb/lb-mole)	30.68	30.68	30.68	30.68
Ms (lb/lb-mole)	28.18	28.08	28.01	28.09
Vwc	10.02	10.89	11.33	10.74
H_2O (%)	19.7	20.5	21.1	20.4
ISO (%)	105.5	109.0	106.8	107.1
Flow Rate Results				
velocity (ft/s)	68.4	69.3	71.5	69.7
Vol. Flow Rate (acfm)	261,029	264,710	272,858	266,199
Vol. Flow Rate (wscfm)	155,999	157,577	163,330	158,969
Vol. Flow Rate (dscfm)	125,220	125,212	128,949	126,460
Particulate Results				
Filter Mass (mg)	6.1	5.9	5.8	5.9
Acetone Mass (mg)	8.5	6.5	8.3	7.8
Total Mass Gain (mg)	14.6	12.3	14.1	13.7
Particulate Conc. (mg/dscm)	12.69	10.35	11.76	11.60
Particulate Conc. (lb/dscf)	7.93E-07	6.46E-07	7.34E-07	7.24E-07
Particulate Conc. (gr/dscf)	0.006	0.005	0.005	0.005
Particulate Emission Rate (lb/hr)	5.95	4.86	5.68	5.50
Particulate Emission Rate (ton/yr)	26.08	21.27	24.88	24.08
Kiln Feed (ton/hr)	90.0	90.0	90.0	90.0
Particulate Emission Rate (lb/ton Kiln Feed)	0.066	0.054	0.063	0.061

CONFIDENTIAL

Bill Wilson Expert Report

Attachment 7

Biodiversity Conservation Conservation Alliance & Sierra Club v.
Mountain Cement Co., Case No. 04CV 361-B
June 13, 2005

INSPECTION REPORT

KILN #2
ELECTROSTATIC PRECIPITATOR

Mountain Cement Corporation
#5 Sand Creek Road
Laramie, Wyoming

Dates of Trip
5/09/01 through 5/17/01
6/18/01 through 6/22/01

Prepared by
Tom Keeler
Rick Arancio

Reviewed by
Tom Keeler

TRK ENGINEERING SERVICES INC.
95 Clarks Farm Road
Carlisle, Massachusetts 01741
978-287-0550
trkeng@apcnetwork.com

TRK REF. NO. MC1-052 & MC2-071
TRK Report: MC010622

I. INTRODUCTION

TRK Engineering Services, Inc. was retained by Mountain Cement, Laramie , WY to inspect the electrostatic precipitator (ESP) and oversee repairs during an unscheduled May 2001 outage. A second visit was made in June to investigate elevated opacity. It was known from previous TRK Engineering site visits that the precipitator has many problems related to design and previous attempts at internal repairs made by a Plant Contractor that were detracting from performance. TRK has been helping the Plant to address these problems during the last couple of outages as time and access have allowed. These efforts have helped to improve performance. The intent of this outage was to continue these repair efforts on a field by field basis as time, access and manpower allowed. Because of the unscheduled nature of the outage, some of the scheduled ESP repairs were not completed. The unscheduled outage created problems with manpower availability and access to the ESP was limited to keep the Mill in operation. Originally, all of the shock bars in the C field of the East Chamber, and all missing plate panels in the ESP were to have been replaced. This was not completed due to time constraints and because most of the replacement shock bars were bent. Additionally, the Contractor's night shift made several installation errors.

This report summarizes findings made during inspection of the ESP and documents repair activity. Photographs highlighting most of the inspection findings and repair activity are attached.

II. UNIT DESCRIPTION

The precipitator is a dual chamber unit that was originally designed and manufactured by Micropol. The precipitator serves a Preheater kiln, with Raw Mill and Cooling Tower. A cyclone is located downstream of the roller mill prior to the precipitator. The precipitator has three mechanical fields (12'-9" X 30') and four electrical fields in the direction of gas flow. The precipitator has 40 gas passages (20 per chamber) spaced at 9". The 1st field is divided into 2 electrical sections in the direction of gas flow, each energized by a dual bushing transformer rectifier (TR) rated at 45 KV, 1000 mA. The 2nd and 3rd fields each have a single electrical field (formed by jumpering together the individual bus sections) energized by dual bushing transformers rated at 45 KV and 2000 mA. The TRs are controlled by Preciptech/BHA SQ-300 automatic voltage controls. Rapping of the collecting plates is via mechanical tumbling hammers; the discharge electrodes are rapped by Eriez vibrators.

Due to the elevation of the plant, higher than typical gas volumes for this cement application are seen, requiring a constant percentage of gas flow bypass of the Roller Mill. It is suspected that the bypass flow and the ductwork configuration creates some unique problems for the precipitator because it likely creates

temperature stratification of the gas flow, which results in zones of varying resistivity in the ESP.

III. FINDINGS / RECOMMENDATIONS / COMMENTS

A. Inlet and Outlet Transitions

As has been pointed out in the past, the design of the precipitator inlet ductwork creates some problems that affect ESP performance. The inlet ductwork arrangement is not symmetrical between each side of the ESP. It is suspected that the East chamber of the ESP may have higher gas flow resulting from the non-symmetrical inlet Y ductwork configuration. Additionally, the junction of the Mill Exit ductwork and the Mill Bypass ductwork creates a temperature stratification zone that affects ESP operation. The gas flow from the Mill Exit ductwork and the Mill Bypass ductwork merge too close to the ESP inlet. As a result, there is not enough time for the gases to mix properly. This is creating temperature stratification in both chambers of the ESP. The stratification could be as much as 150° F, which would create a variety of resistivity zones within the ESP, and make it very difficult to manipulate gas temperature to optimize ESP operations. The Plant should install some mixing vanes in this transition to reduce the stratification. The single thermocouple used at the top of the ductwork primarily measures the gas temperature from the Bypass duct. Three (3) new horizontally oriented thermocouples should be installed in each duct to get a more accurate profile of the gas temperatures entering the ESP.

The perforated gas distribution plate in the East chamber inlet was bowed. The roof supports were checked and the retainer clips along the wall were all properly positioned. The perforated plate should be monitored during future outages to see if the bowing becomes more pronounced. More than likely, the deformation was the result of a past temperature excursion, the rapid temperature change that occurs when the Roller Mill is shut down or the vertical temperature gradient created by the inlet ductwork layout. It is not having an adverse affect on the ESP.

An access door was installed in the East outlet nozzle during this outage to allow inspection and cleaning of the nozzle. Two to three feet of accumulated material was removed and a large hole was repaired. Time was not available to install a door on the West outlet nozzle. This should be done next year.

B. Internal Inspection

1. Alignment / Discharge Electrodes & Collecting Surfaces

Previous TRK inspections have revealed clearance problems at the bottom of the fields that are / were detracting from overall ESP performance. Close clearances

TRK ENGINEERING SERVICES INC.

95 Clarks Farm Road
Carlisle , Massachusetts 01741
Tel 978-287-0550
Fax 978-287-0569

November 21, 2000

Mr. Alex Wojciechowski
Mountain Cement Corporation
#5 Sand Creek Road
Laramie, Wyoming 82070

Subject: Electrostatic Precipitator
Site Visit - August 20 - 29, 2000

Dear Alex:

Enclosed is the trip report for the site visit made by Rick Arancio to inspect the precipitator and oversee repairs during the August 2000 outage. Please make copies for distribution to all concerned parties.

Repairs made during this outage will help to improve ESP performance and reliability. The efforts made to eliminate close electrical clearances and air inleakage, and the replacement of the shock bars on the collecting plates in the C West field, will all have a positive affect on ESP operation. However, there remain a number of mechanical issues that need correction to further improve ESP performance. As we have previously recommended, a 3-5 plan year to rehabilitate the ESP should be continued to optimize the ESP.

It was a pleasure working with you. If you have any questions or concerns regarding this report, or if we can help you in any other way, please do not hesitate to contact us.

Regards,

Thomas R. Keeler

I INTRODUCTION

TRK Engineering Services, Inc. was retained by Mountain Cement, Laramie, Wyoming to inspect the Kiln #2 electrostatic precipitator (ESP) and oversee repairs during the August 2000 outage. A preliminary work scope prepared by TRK Engineering following a limited inspection of the ESP in March - April served as the basis for repair activity. Other repairs were made based on inspection findings made during this outage. Whitehead Construction of Elizabethton, TN was contracted to perform the repairs.

This report summarizes inspection findings and documents repair activity during the August 2000 outage. Photographs highlighting some of the inspection findings and repair efforts are included. A recommended work scope for the next outage is also included with this report.

II. UNIT DESCRIPTION

The precipitator is a dual chamber unit that was originally designed and manufactured by Micropol. The precipitator serves a Preheater kiln, with Raw Mill and Cooling Tower. A cyclone is located downstream of the roller mill prior to the precipitator. The precipitator has three mechanical fields ($12'\text{-}9^{19}/_{32}$ X 30') and four electrical fields in the direction of gas flow. The precipitator has 40 gas passages (20 per chamber) spaced at 9". The first field is divided into 2 electrical sections in the direction of gas flow, each energized by a dual bushing transformer rectifier (TR) rated at 45 KV, 1000 mA. The second and third fields each have a single electrical field (formed by jumpering together the individual bus sections) energized by dual bushing transformers rated at 45 KV and 2000 mA. The TRs are controlled by Preciptech/BHA SQ-300 automatic voltage controls. Rapping of the collecting plates is via mechanical tumbling hammers; the discharge electrodes are rapped by Eriez vibrators (In some locations, AVC electric impulse rappers have been installed).

Due to the elevation of the plant, higher than typical gas volumes for this cement application are seen, requiring a constant percentage of gas flow bypass of the Roller Mill. It is suspected that this creates some unique problems for the precipitator because it likely creates temperature stratification of the gas flow, which results in zones of varying resistivity in the ESP.

III FINDINGS / RECOMMENDATIONS / COMMENTS

A. Inlet and Outlet Transitions

Heavy material buildup was found behind the perforated gas distribution plates in the precipitator inlet. In the East Chamber 3-4 feet of material had accumulated. It extended all the way up the sloped floor of the nozzle to behind the isolation damper.

There was also 3-4 feet of buildup blocking the turning vanes in the inlet duct. The accumulated material was hardened, likely the result of air inleakage due to holes in the nozzle floor. Three holes were patched on the East side. Material buildup in the West Chamber inlet was 1-2 feet high and accumulated in a pattern similar to that in the East Chamber. The heavy buildup in the East Chamber would definitely distort gas flow/uniformity to the precipitator. These areas were cleaned out during the outage. This should be done during every outage. It is not known how long a period over which the material that was found had accumulated. A visual evaluation of the inlet gas distribution should be made during the next outage, now that the material has been removed. If material continues to accumulate, some modifications may be warranted.

At some time in the past the lower 1' of the perforated plates was cut off. This was likely done in an attempt to help promote material flow however, it can also create a situation where the gas sweeps along the bottom of the unit and leads to material reentrainment that hikes opacity. During this outage a snow fence was installed along the bottom of the perforated plates in both ESP chambers. The snowfence helps to maintain gas uniformity while promoting material flow.

Air inleakage in the precipitator inlets was prevalent. Air inleakage promotes corrosion and can lead to deterioration of ESP components that may ultimately compromise performance. In addition to causing corrosion, air inleakage can have an adverse affect on ESP performance by increasing the gas volume and gas velocities, reducing treatment time, modifying temperature (resistivity), distorting gas distribution, and/or promoting material reentrainment or buildup. During this outage, efforts were made to eliminate sources of air inleakage. The floor of the East Chamber nozzle had many holes in it. The entire floor was overlaid with steel plate and seal welded. The inlet dampers and expansion joints of both chambers were in poor condition. The inlet expansion joint of the East chamber had visible holes in it that were allowing air inleakage. Efforts were made to temporarily seal the joint, and the damper tracks were replaced. There were no visible holes in the West chamber expansion joint, but it is in a deteriorated condition. The damper tracks were repaired. Both expansion joints should be replaced during a future outage. The weather covers for the inlet dampers were not in place. Their absence could allow water penetration of the inlet. The covers were reinstalled. All visible sources of air inleakage in the ESP inlet were sealed during this outage. This should be done during every outage.

For purposes of documentation, the walls of the inlet duct were found to have been buckled. The reason for this is not known. It may have been the result of a temperature excursion when the spray tower was not available for one reason or another. No action is required in this area at this time but it should be checked annually to insure that it does not worsen.

The outlet nozzle was not inspected during this outage due to lack of access. An access door should be procured and installed during the next outage to allow for an inspection. A ladder and small platform may need to be installed in order to access the

area. The access doors need to be installed prior to the outlet guillotine damper. Typically, in a cement process, the outlet is an area prone to a lot of corrosion problems and air infiltration problems.

B. Internal Inspection

1. Alignment / Discharge Electrodes & Collecting Surfaces

Previous TRK Engineering inspections have been limited by time and access, however, they have revealed clearance problems at the bottom of the fields that are/were detracting from overall ESP performance. This outage provided the opportunity for more detailed inspection and repair. In general, the collecting plate to discharge electrode frame alignment was within reasonable tolerance. No adjustment of the HV frames was necessary however, there were many instances of localized close clearances that compromise the overall alignment. Close clearances decrease the sparkover voltage and can lead to a reduction in power and lower ESP performance. Most of the clearance issues are located along the bottom of the fields due to a number of mechanical anomalies. These problems were known to be more prevalent in the West chamber of the precipitator, particularly the C West field. Efforts were made during this outage to identify and eliminate close clearances.

Reduced clearances along the leading edge of the C West field were known to exist where some of the collecting plate panels were bowed or bent slightly. The plate deformation is attributed to little or no movement of the plates under rapper impact. The individual plates should have some provision for slight back and forth movement in the direction of gas flow when impacted with a rapper. The plate assembly seemed to be too rigid. The bolted spacer bars that were installed during the 1999 maintenance outage, the shock bars located along the bottom of the plates that are impacted by the tumbling rapper hammers, and the alignment rakes along the leading and trailing edges of the plates were thought to be a contributing factors to this condition. Inspection of the ESP during this outage found that movement of many of the individual collecting plates throughout the ESP was restricted. This condition was much more prevalent in the fields on the West side of the ESP, and worst in the C West field.

The shock bars at the bottom of the plates are two pieces of flat bar separated by spacers that are bolted to the bottom of the collecting plate panels. They stiffen the bottom of the collecting plate assembly and transfer rapping energy to the plate. They were replaced during a previous outage. It appeared that a two piece shock bar assembly was used in the C & D west fields versus a one piece shock bar assembly that was used in the A/B field. The flat bar material used with the two piece shock bar assembly was not as thick as the material used with the one piece shock bars. Additionally, the spacers were installed on the wrong side which caused the flat bar to draw to one side when tightened. The combined affect was that the shock bar and bottom of the plate bowed over the width of the plate. That, combined with restricted

These areas need to be reinsulated to prevent localized corrosion and potential buildups. The doors and surrounding area should be inspected during every outage.

Access ladders were installed in the hoppers during this outage to meet MSHA regulations. Usually, ladder rungs in a hopper are fabricated from round stock and welded to the hopper wall. They allow access while minimizing the potential for buildup. The ladders installed in the hoppers during this outage were prefabricated and have slightly greater potential for promoting buildup. They were installed as is due to time constraints. During installation, many of the small wall mounted clips that had previously been used for access were cut out. Some of these clips remain and should be cut out in the future. During the next shutdown the hopper ladders should be inspected for material buildup.

3. Insulator Compartments/ Transformer Rectifier (TR) Enclosures

Five (5) electrically tracked high voltage rapper rod insulators were found; two in the east chamber and 3 in the west chamber of the precipitator. These can lead to high resistance grounds that limit power input. They were all replaced during this outage. The suspected cause of the tracking is moisture formation due to the purge blower/heater system being out of service. At the time of TRK arrival some of the pressurization blowers were out of service. These need to be in operation at all times to keep the insulator compartments dry and warm to maintain the integrity of the insulators. Consideration should be given to an alarm circuit to notify plant personnel when one of these units are not in service.

All of the support insulators, thru-bushings, and insulated rapper rods were inspected and cleaned, and all of the high voltage connections were checked to verify that they are tight. This should be during any outage. The thru-bushings should be re-worked at some time in the future. The high voltage connection is tight, however, the center of the bushing, where the pipe bus passes through it, is not sealed. This should be corrected by replacing that section of bus with a pipe that is threaded on both sides of the thru-bushing so that a nut, washer and gasket can be installed to seal both sides of the thru-bushing.

All of the high voltage bushings in the TR enclosures were inspected and cleaned during this outage. A small amount of oil was observed at the base of the C field west TR bushing. This area was cleaned and inspected but no leak was evident. The area should be reinspected during the next shutdown. A regular maintenance program needs to be developed where the transformers are meggered and the oil checked for dielectric strength and impurities. This has not been done on this job site for many years. It should be done about every 2-3 years.

Bill Wilson Expert Report

Attachment 8

Biodiversity Conservation Conservation Alliance & Sierra Club v.
Mountain Cement Co., Case No. 04CV 361-B
June 13, 2005

TRK Engineering Services, Inc.

95 Clarks Farm Road, Carlisle, MA 01741
Tel: 978-287-0550, Fax: 978-287-0569, Email: trkeng@apcnetwork.com

July 30, 2004

Mr. Cal Southwick
Mountain Cement Corporation
#5 Sand Creek Road
Laramie, Wyoming 82070

Subject: Electrostatic Precipitator
Kiln #2 2004 Maintenance Outage

Dear Cal:

Enclosed is the summary report by Rick Arancio for the Spring 2004 Kiln #2 electrostatic precipitator maintenance outage. It documents inspection findings and repair activity. Separate copies are being forwarded to Brett Bott and Mike Meysing. An additional unbound black & white copy is enclosed in the event you wish to make copies for wider distribution.

In general, the outage seems to have gone quite well and I was pleased to hear that the ESP has been maintaining good opacity even with the increase in temperature to the ESP. One of the objectives of this year's outage was to replace some of the inlet field collecting plate panels. Unfortunately, this appears to be a more involved process than anticipated. The amount of needed maintenance and repair work that was identified and the fact that there was not a second shift made this an unrealistic goal for this year's outage with the manpower available.

During the last year BHA has changed it SQ300 controls which require the cabinet to be rewired. To make thing easier we would recommend using only the older version of the controls. We have several used controls available that would work. Please let me know if you are interested in purchasing any for spare parts.

As always, it was a pleasure working with you. I apologize for the delay in getting this to you, but we were inundated with field work through June and are only now beginning to catch up with paperwork. If you have any questions or concerns regarding this report, or if we can help you in any other way, please do not hesitate to contact us.

Regards,

Thomas R. Keeler

Cc: Brett Bott
Mike Meysing

B. ESP Inspection

Alignment / Discharge Electrodes & Collecting Surfaces

Previous TRK inspections have revealed clearance problems at the bottom of the fields that are / were detracting from overall ESP performance. Close clearances decrease the sparkover voltage in the ESP and can lead to a reduction in power and lower ESP performance. Additionally, there has been and continues to be damage to the collecting plates resulting from both design deficiencies and a number of mechanical anomalies. Many of these problems have been discussed at length in previous TRK Engineering reports and efforts have been and continue to be made towards addressing them. Findings made during this outage were similar to those made during previous inspections as repairs are being made on a field-by-field basis due to outage time limitations. Unfortunately, some of the repairs made in the recent past, in particular the shock bars, remain a persistent problem that will only be overcome by rebuilding with a better design.

During this outage, efforts were again directed towards the continued elimination of close clearances. The shock bars used at the bottom of the collecting plates have been a source of these problems. Over the past few years, all of the damaged shock bars have been replaced on a field-by-field basis. It was hoped that problems with the shock bars had been largely addressed, however, the shock bar design seems to be only marginally adequate for the rapping force being applied. A lot of time was spent during this outage repairing cracks in the shock bars that have developed. Many of the shock bars, some of them the newly installed replacements and some of them the originals, are beginning to crack along the bottom of the shock bar near the spacers. Most of the cracks tended to be found along the rapped edge of the shock bar by welds at the 1st or 2nd spacers along the shock bar. Some of cracks correlate to where shock bar strike pads were missing. The absence of the strike pads has a tendency to cause the side of the shock bar to mushroom outward. Eventually this will cause the shock bar to bind in the alignment rake and restrict movement of the colleting plate, which creates a close clearance to the adjacent discharge electrodes and puts more stress on the shock bar welds. Repairs were made during this outage by welding up all of the cracks. This was completed in all fields as needed.

During last year's air load of the precipitator, the D West field was sparking and limiting power. The ESP was shut down and reinspected from the top of the field. Several randomly located bowed plates were identified where clearances to the adjacent wires were compromised. Five (5) wires were removed to compensate for this. When the ESP was reenergized last outage power levels in the field were improved, however, sparking was still occurring. The spark rate was increased and the field was allowed to spark overnight. The following day the ESP was shut down and this field was inspected again. This time, burn marks from the overnight sparking were evident by one of the support wires. The support wire was repositioned and the field placed back into service, after which the field operated quite well. During this year's outage and additional 6

Bill Wilson Expert Report

Attachment 9

Biodiversity Conservation Conservation Alliance & Sierra Club v.
Mountain Cement Co., Case No. 04CV 361-B
June 13, 2005

217/782-2113

CLEAN AIR ACT PERMIT PROGRAM (CAAPP) PERMIT
and
TITLE I PERMIT[1]

PERMITTEE

Illinois Cement Company
Attn: Eugene Hodges
1601 Rockwell Road
La Salle, Illinois 61301-0442

Application No.: 95090101 I.D. No.: 099030AAZ
Applicant's Designation: Date Received: September 7, 1995
Operation of: Portland Cement Manufacturing
Date Issued: November 19, 2002 Expiration Date[2]: November 19, 2002
Source Location: 1601 Rockwell Road, La Salle, La Salle County
Responsible Official: Eugene Hodges

This permit is hereby granted to the above-designated Permittee to OPERATE Portland Cement Manufacturing Plant, pursuant to the above referenced permit application. This permit is subject to the conditions contained herein.

If you have any questions concerning this permit, please contact Mangu Patel at 217/782-2113.

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

DES:MJP:psj

cc: Illinois EPA, FOS, Region 2
USEPA

[1] This permit may contain terms and conditions which address the applicability, and compliance if determined applicable, of Title I of the CAA and regulations promulgated thereunder, including 40 CFR 52.21 - federal PSD and 35 IAC Part 203 - Major Stationary Sources Construction and Modification. Any such terms and conditions are identified within this permit.

[2] Except as provided in Condition 8.7 of this permit.

7.2.2 List of Emission Units and Pollution Control Equipment*

Source	Description	Control Equipment	Date Constructed**
Raw feed preparation	Grinding of raw materials Roller mill (Loesche Mill)	422 and 305 Baghouses	Prior to February 1974
	Raw feed system: Raw blending, raw mix storage, kiln feed tank	311 Baghouse, 341 Baghouse, 404 Baghouse, 312-01 Baghouse, 312-02 Baghouse	Prior to February 1974
	Fly ash storage and feeding system	341 Baghouse	September 1995
Pyro processing System	Pre heater kiln	422 Baghouse	February 1974
Cooling and Grinding	Clinker cooler	429 and 432 Baghouses	Prior 1974
	Clinker storage	437 Baghouse	After April 1972
	Clinker reclaim	604 baghouse	After April 1972
	Mini mill #1	630 Baghouse	Prior 1973
	Mini mill #2	611 Baghouse	Prior 1973
	Mini mill #3	611 Baghouse	Prior 1973
Cooling and Grinding (Cont.)	#5 Finish mill	722 Baghouse	Prior 1974
	#6 finish mill	2715, 2722, 2724 & 2726 baghouses	1998
Shipping and Storage	Cement storage and loading	729, 807 and 809 Baghouses	1961

* The above list of emission units may not include units constructed after the submittal of the original application. However, any such units are identified in the attached state construction and operating permits that are incorporated here in (see Attachment 4). These units are permitted to operate under this permit in accordance with the conditions of these attached permits. This list will be revised to include such units in subsequent reopening of this permit in accordance with the timely submittal of the necessary information.

** State Construction and Operating Permits (attachment 4) provides dates of latest modification.

TNRCC

Form OP-1 (Page 1)
Site Information Summary
Federal Operating Permit Application

TNRCC Use Only
Fms # 1132
TO

THIS FORM MUST BE SUBMITTED FOR ABBREVIATED AND FULL APPLICATIONS. Abbreviated applications may be submitted for an entire site, and are not required to contain the information requested in Section X. Full applications must contain the information requested in all sections, and must be submitted for each permit requested at the site. Refer to the form instructions for specific guidance to aid in completing this application. General information is provided in the Texas Natural Resource Conservation Commission (TNRCC) document entitled "Federal Operating Permit Application Guidance." Print or type all information. Title 30 Texas Administrative Code §§ 122.133 and 122.134 (30 TAC §§ 122.133 and 122.134) requires the submittal of a timely and complete application. A timely and complete application will receive an application shield, as defined in 30 TAC § 122.138. Failure to supply any additional information requested by the TNRCC that is necessary to process the permit application may result in loss of the application shield. Please direct any questions regarding this application form to the Office of Air Quality, Operating Permits Division (OPD) at (512) 239-1334 or Fax no. (512) 239-1070. Address written inquiries to TNRCC, Office of Air Quality, Operating Permits Division, Mail Code 163, P.O. Box 13087, Austin, Texas 78711-3087.

I. COMPANY IDENTIFYING INFORMATION	
A. Company Name: TEXAS LEHIGH CEMENT COMPANY	
B. Mailing Address: PO BOX 610	
City: BUDA	State: TEXAS
Zip Code: 78610	C. Submittal Date: 7/1/98
D. Telephone: 512-295-6111	E. Fax: 512-295-3102

II. SITE INFORMATION												
A. Site Name: CEMENT PLANT												
B. County: HAYS					C. Primary SIC: 3241							
D. Primary account number for site: HK-0014M												
E. Secondary TNRCC account numbers for site:												
F. Indicate affected state(s) required to review permit application[1,2]: *(Place an "X" in the appropriate box[es].)*												
AR		CO		KS		LA		NM		OK		NA

G. Indicate major source classifications based on the site's potential to emit:

Pollutant	CO	NO_x	VOC	SO_2	PM_{10}	Pb	§ 112	Other
Major Source Threshold *(tons per year)*	100	Varies[3]	Varies[3]	100	100	100	10/25	100
Major at the Site *(YES/NO)*	YES	YES	NO	YES	YES	NO	YES	NO

H. Is the site within a local program area jurisdiction? *(YES/NO)*	NO
I. Estimated number of emission units at the site:	39
J. Estimated number of total proposed SOPs and/or TOPs at the site:	1
K. Estimated number of total proposed GOPs at the site:	0
L. Will emissions averaging be used to comply with any 40 CFR 63 Subpart? *(YES/NO)*	NO
M. Indicate the 40 CFR 63 Subpart(s) that will use emissions averaging:	

1. Indicate "NA" for general operating permit (GOP) applications.
2. Indicate "NA" for site operating permit (SOP) and temporary operating permit (TOP) applications not requiring affected state review.
3. Major source threshold depends on location (county) of the site. See applicable guidance document for more information.

PROCESS DESCRIPTION

Texas Lehigh Cement Company manufactures several types of portland cement. The current production capacity is approximately 3500 tons of clinker per day. This production rate requires a feed rate of 275 tons per hour of raw material. Raw materials include limestone, silica sources and iron sources. There are various sources for this material. Top soil and sand are used as a silica sources iron scale , slag, recovered rust and natural iron ore are examples of material used as an iron source. Limestone and topsoil are mined at the Buda plant site. Iron source materials and sand are received by rail or truck. These raw materials are blended and fed into the kiln system. Fuel used for cement manufacturing is a combination of coal,coke, natural gas, wood waste and tire derived fuel (TDF). These fuels are introduced into the kiln system through the calciner, through the kiln torch, or in the case of TDF (whole tires) through a riser duct above the rotary kiln. All solid fuel is received by rail or truck. Natural gas is delivered by pipeline.

The plant is referred to as a four stage preheater/precalciner plant. Raw materials are blended in appropriate portions, ground into a fine powder, and fed into the kiln system through the calciner, then into the rotary kiln. The rotary kiln completes the processing of the raw materials into the intermediate product "clinker". This clinker material falls from the kiln into a cooler . The cooled material is transferred to a covered storage area. As needed this material is fed into a finish mill system where it is blended with limestone or gypsum and ground into a finished product, portland cement or similar portland cement products. These products are stored in silos prior to shipment in bulk trucks, bulk railcars, or bagged for shipment via truck or railroad boxcar.

All airstreams are directed into baghouses for dust removal. Collected dust is recycled by blending into the raw material feed or used as a finished product. Subsystems of the above processes are described more fully below.

RAW MATERIAL SYSTEM

The cement manufacturing process begins at the quarry. Limestone is quarried via sequential blasting which limits ground vibration. Topsoil is stripped (by heavy equipment) from new mining areas and used as a silica source. Quarried materials are loaded onto large (50 ton capacity) trucks and transported to the primary crusher. Average round trip from quarry to plant is 0.5 miles. Emissions from plant roads are noted as FUG-4.

The truck unloading point (for quarried material) is a three sided structure with water sprays for dust control. The spray system is manually operated and used when the mined material is dry or dusting. The crusher reduces the rock to 2 inch or smaller material and drops it onto a covered conveyor (Belt 104) for transport to a covered

1/27/04

STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR POLLUTION CONTROL
333 WEST NYE LANE
CARSON CITY, NEVADA 89706-0851

NO. AP3241-0387.01

CLASS I AIR QUALITY OPERATING PERMIT
GENERAL REQUIREMENTS

Issued to: Nevada Cement Company, hereafter called the Permittee
Mailing Address: P.O. BOX 840, FERNLEY, NEVADA 89408
Physical Address: INTERSTATE 80, EXIT 46, FERNLEY, NEVADA
General Facility Location: Section(s) 10 & 11, T20N, R24E, MDB&M (HA 76)

Emission Unit List: (131 Emission Units)

Nevada Cement Company, Fernley Facility

A. System 01 – Limestone Truck Dump

PF1.001	Limestone Truck Dump to Primary Crusher Hooper

B. System 02 – Primary Crusher Circuit

S2.001	Primary Crusher Feeder 101 transfer to Primary Crusher 102
S2.002	Primary Crusher 102
S2.003	Primary Crusher 102 to Apron Feeder-103
S2.004	Apron Feeder-103 transfer to Conveyor 104
S2.005	Drag Chain Conveyor 103-1 transfer to Conveyor 104
S2.006	Conveyor Transfer-107 to Primary Crusher-102

C. Systems 03 & 04: – Secondary Screening Circuit & Secondary Crusher Circuit

S2.007	Conveyor 104 transfer to Shaker Screen 106-1
S2.008	Shaker Screen 106-1
S2.009	Shaker Screen 106-1 transfer to Conveyor 107
S2.010	Shaker Screen 106-1 transfer to Conveyor 108
S2.011	Shaker Screen 106-1 transfer to Conveyor 106-2
S2.012	Conveyor 106-2 transfer to Conveyor 106-3
S2.013	Conveyor 106-3 transfer to Secondary Crusher 106
S2.014	Secondary Crusher 106 transfer to Conveyor 106-4
S2.015	Secondary Crusher 106
S2.016	Conveyor 106-4 transfer to Secondary Screen 106-1

D. System 05 – Raw Material Storage

PF1.002	Conveyor 108 Feed End Chute
PF1.003	Conveyor 108 transfer to Conveyor 115
PF1.004	Overhead Crane 109 transfer (Limestone)
PF1.005	Overhead Crane 109 transfer (Fe Ore)
PF1.006	Overhead Crane 109 transfer (Clay)

E. System 06 – #1 Raw Mill (combusting Natural Gas)

S2.017	Conveyor 204 transfer to Bucket Elevator 205
S2.018	Bucket Elevator 205 transfer to Air Separator 206
S2.019	Air Separator 206 to Air Slide 207
S2.020	Air Slide 207 transfer to Pump 213
S2.021	#1 Raw Mill 208
S2.022	14 MMBtu/hr Natural Gas Fired Heater 211

STATE OF NEVADA
BUREAU OF AIR POLLUTION CONTROL

NO. AP3241-0387.01

CLASS I AIR QUALITY OPERATING PERMIT SPECIFIC REQUIREMENTS

Issued to: Nevada Cement Company, as Permittee

Section VI. Specific Operating Conditions (continued)

I. Emission Unit #(s): S2.030 - S2.038, location North 4,387.730 km, East 305.907 km, UTM (Zone 11)

System 09 – #1 Kiln Circuit (combusting 100% Coal or Coal/Coke blend; Non-hazardous used oils and greases; and Non-hazardous hydrocarbon contaminated soils)		
S	2.030	Kiln #1 406
S	2.031	Coal Mill 805
S	2.032	Screw Conveyors 420-2 & 420-3 to 420-1
S	2.033	Screw Conveyor 416 transfer to Screw Conveyor 420-4
S	2.034	Screw Conveyor 414-1 transfer to Screw Conveyor 420-4
S	2.035	Screw Conveyor 420-1 transfer to Screw Conveyor 420-4
S	2.036	Screw Conveyor 420-4 transfer to Bucket Elevator 414
S	2.037	Rotary Feeder 417 transfer to Bucket Elevator 414
S	2.038	Bucket Elevator 414 transfer to Kiln #1 406

1. NAC 445B.3405 (NAC 445B.316) *Part 70 Program*
 Air Pollution Control Equipments
 a. Emissions from **S2.030 - S2.038** each shall be ducted to a control system consisting of a **Baghouse (DC 419)** with 100% capture and a maximum volume flow rate of **180,000** actual cubic feet per minute (acfm). The volumetric flow rate may be determined by utilizing Method 2 - *Determination of Stack Gas Velocity and Volumetric Flow Rate* as referenced in 40 CFR Part 60, Appendix A.

 Stack Height (feet from ground level): 50
 Stack Inside Diameter (feet): 24.41 (Slotted Roof)
 Stack Temperature (°F): 500

STATE OF NEVADA
BUREAU OF AIR POLLUTION CONTROL

NO. AP3241-0387.01

CLASS I AIR QUALITY OPERATING PERMIT SPECIFIC REQUIREMENTS

Issued to: Nevada Cement Company, as Permittee

Section VI. Specific Operating Conditions (continued)

Q. Emission Unit #(s): S2.062 - S2.067, location North 4,387.720 km, East 305.876 km, UTM (Zone 11)

System 15 – #2 Kiln Circuit (combusting 100% Coal or Coal/Coke blend; Non-hazardous used oils and greases; and Non-hazardous hydrocarbon contaminated soils)		
S	2.062	Kiln #2 2013
S	2.063	Coal Mill 2043
S	2.064	Baghouse Screw Conveyors to Screw Conveyor 9085
S	2.065	Screw Conveyor 9085 transfer to Bucket Elevator 2010-1
S	2.066	Bucket Elevator 2010-1 transfer to Screw 2009 and Dust Tank
S	2.067	Dust Tank to Weigh Screw 2009-14

1. NAC 445B.3405 (NAC 445B.316) *Part 70 Program*
 Air Pollution Control Equipments
 a. Emissions from **S2.062 - S2.067** each shall be ducted to a control system consisting of a **Baghouse (DC 9109)** with 100% capture and a maximum volume flow rate of **144,000** actual cubic feet per minute (acfm). The volumetric flow rate may be determined by utilizing Method 2 - *Determination of Stack Gas Velocity and Volumetric Flow Rate* as referenced in 40 CFR Part 60, Appendix A.

 Stack Height (feet from ground level): 80
 Stack Inside Diameter (feet): 8
 Stack Temperature (°F): 450